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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,326	06/07/2007	Shigeru Kinoshita	80183(305882)	1834

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EXAMINER	
WESTERBERG, NISSA M	

ART UNIT	PAPER NUMBER
1618	

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01/31/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/586,326	KINOSHITA ET AL.	
	Examiner	Art Unit	
	Nissa M. Westerberg	1618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 December 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *1-4 and 11-14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *7/14/06, 6/7/07,* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *7/14/06, 7/3/08,3/8/10*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of group III, claims 5 – 10, in the reply filed on December 15, 2010 is acknowledged.

The requirement is still deemed proper and is therefore made FINAL.

Claim Objections

2. Claims 5 – 10 are objected to because of the following informalities: claims 5 - 10 depend from withdrawn claim 1. Claims should not depend from claims that have been withdrawn from consideration. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 5 - 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossi et al. (Curr Eye Res, 1990) in view of Brodnitz et al. (J Agr Food Chem, 1971).

Rossi et al. investigates the use of the substance eledoisin as a possible treatment for dry eye (abstract). Average basal tear flow was measured prior to application of eledoisin to the eye by collection of fluid from the cannula (p 274, col 1, ¶ 2) to provide an initial tear volume measurement step. Eledoisin was applied to the eye, resulting in exposure of the eye to the potential lachrymator substance, and two more

tear volume measurements, corresponding to the first and second 10 minute time period following exposure, were performed (p 274, col 1, ¶ 2). In a separate set of experiment, the wetting of a sponge was used to measure tear volume before and after exposure of the eye to eledoisin (p 274, col 1, ¶ 4).

Rossi et al. does not disclose the use of the thioalkanal-S-oxide compounds required in the instant claims.

Brodnitz et al. discloses that thiopropanal S-oxide (a compound according to claim 1 in which R is a C_1 alkyl) is the lachrymatory factor in onions (abstract). A series of straight chain thioalkanal S-oxides that were synthesized also possess lachrymogenic properties (p 272, col 1, ¶ 2). These compounds correspond to the compound in claim 1 with R being C_1, C_2 or C_3 alkyl chain (Table III, p 271).

It would have been obvious to the person of ordinary skill in the art at the time the invention was made to use a thioalkanal S-oxide as the tear producer reagent in the method taught by Rossi et al. The person of ordinary skill in the art would have been motivated to make those modifications and reasonably would have expected success because Brodnitz et al. discloses that thioalkanal S-oxides are the compounds found in onions that are responsible for the stimulation of tear production. Measurement of the tear volume before and after exposing the eye of a subject to a substance known to induce tear production (lachrymation) allows the determination of the relative strength of the lachrymation effect and/or effective dose of the lachrymator compound for increasing tear production. Information about the effective dose and exposure time required to induce tear formation would provide information to the practitioner of the

amount of time that the thioalkanal S-oxide must be exposed to the eye in order to have the effect, which reads on the stimulation measurement step of claim 6.

7. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rossi et al. and Brodnitz et al. as applied to claims 5 - 8 above, and further in view of Yokoi et al. (Br J Ophthalmol, 1999).

As discussed above, Rossi et al. and Brodnitz et al. disclose the measurement of tear volume induced by exposure of the eye to lachrymator substances such as eledoisin or the thioalkanal S-oxides naturally found in onions. Rossi et al. uses a tube to collect tears through the cannula or wetting of a sponge to determine tear volume.

Neither reference discloses a non-contact method such as using the radius of the tear meniscus curvature to measure the tear volume.

Yokoi et al. disclose that the menisci is one location, along with the periocular tear film and culs de sac, in which human tears are distributed (p 92, col 1, ¶ 1). Tear volume information is indispensable in diagnosing ocular surface diseases such as dry eye by methods such as the invasive Schirmer test or various meniscus measurements such as radius of curvature (p 92, col 2, ¶ 2). Invasive tests can either add fluid to the conjunctival sac or can stimulate tearing (p 92, col 2, ¶ 1), leading to variations in the results obtained. Yokoi et al. use a photographic system to measure tear meniscus curvature that they term 'reflective meniscometry' (p 92, col 2, ¶ 2) that is not invasive and does not require contact with the eye. Pictures such as those shown in figure 5 generate data about the radius of meniscus curvature as shown in figure 6 (p 94).

It would have been obvious to the person of ordinary skill in the art at the time the invention was made to use a non-invasive technique to measure the radius of tear meniscus curvature like reflective meniscometry in the method of Rossi et al. and Brodnitz et al. The person of ordinary skill in the art would have been motivated to make those modifications and reasonably would have expected success because Yokoi et al. discloses that invasive tear volume measurements techniques can add tear volume or stimulate tearing, altering the experimental results based on the particular measurement method used and amount of tear stimulate by the measurement method, which could vary from one trial to another. The use of the non-invasive photographic radius measurement obtained using reflective meniscometry will allow for experimental results that are not influenced by the measurement technique to be obtained.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nissa M. Westerberg whose telephone number is (571)270-3532. The examiner can normally be reached on M - F, 8:00 a.m. - 4 p.m. ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael G. Hartley can be reached on (571) 272-0616. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Nissa M Westerberg/
Examiner, Art Unit 1618